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Prenatal Stress as Possible Aetiogenetic Factor of Homosexuality in Human Males

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Summary

Out of 865 homosexual males who were registered by venerologists in 6 districts of the GDR highly significantly more homosexuals were born during the stressful war and early postwar period of the Second World War, i.e. between 1941 and 1947 (with a maximum of relative frequency in 1944-1945), than in the years before or after this critical period. This finding suggests that stressful prenatal (or perinatal) events may represent an aetiogenetic factor for homosexuality in human males.

Introduction

Male rats exposed to a temporary androgen deficiency during sexual differentiation of the brain, but a normal androgen level in adulthood were sexually excited preferentially by partners of the same sex (Dörner and Hinz, 1967; Dörner, 1976). Similar homosexual behavioural patterns were then observed in adult male rats which had been exposed to prenatal stress (Ward, 1977). Furthermore, a significant decrease of plasma testosterone levels was found in male rat fetuses and newborns following prenatal stress (Stahl et al., 1978; Dörner, 1979). In view of these findings, androgen deficiency produced by prenatal stress should also be regarded as a possible aetiogenetic factor in the development of male homosexuality in other species, especially in the human. Therefore, the relative frequency of male homosexuality was studied in men who were born in Germany and the GDR, respectively before, during or after the Second World War.

Material and Method

865 homosexual males were evaluated who were born between 1932 and 1953 and were registered by venerologists in 6 districts of the GDR (Berlin, Brandenburg, Halle Leipzig, Rostock and Karl Marx-Stadt) during recent years. The relative frequency of homosexual males per year of birth was defined by the ratio of the number of registered homosexual males per 10^5 of total males born in these years and living now in the GDR (Statistical Year Book of the GDR, Staatsverlag der DDR, Berlin 1976 p. 389). These relative frequencies were tested for significant differences at the level $\alpha = 0.001$ using a combination of the fourfold table and χ^2 -test (Sachs, 1978).

Results

In Table 1, the distribution of 856 homosexual males according to the years of birth, the number of total males born in these years and living now in the GDR as well as the relative frequency of registered homosexual males per 10^5 total

Table 1 Number of registered homosexual males, of total males and relative frequency of registered homosexual males per 10^5 total males born between 1932 and 1953 and now living in the GDR

Years of birth	Number of registered homosexual males	Number of total males	Relative frequency of registered homosexual males per 10^5 males
1932	13	97 150	13.4
1933	13	95 883	13.6
1934	17	118 960	14.3
1935	26	124 446	20.9
1936	20	124 167	16.1
1937	27	124 343	21.7
1938	39	132 303	29.5
1939	35	142 992	24.5
1940	48	144 735	33.2
1941	73	138 886	52.6
1942	75	110 145	68.1
1943	47	115 175	40.8
1944	77	110 773	69.5
1945	61	75 293	81.0
1946	41	68 749	59.6
1947	43	90 901	47.3
1948	33	93 750	35.2
1949	34	110 615	30.7
1950	40	127 644	31.3
1951	34	133 431	25.5
1952	41	134 642	30.5
1953	28	135 780	20.6

males is represented. The number and relative frequency of homosexual males born before the war (1932 to 1939) is low followed by a highly significant increase during the Second World War (1940 to 1945) and a significant decrease after war (1946 to 1948).

A statistical evaluation is given in Table 2. In this case, the relative frequency of homosexual males in each year of birth is compared with that of all other years. Therefore, the years of birth are represented in a horizontal and diagonal scale as well. The years of birth between 1941 and 1947 signified by circles above and below the diagonal scale have highly significantly increased relative frequencies of homosexual males as compared to the years of birth from 1932 to 1940 and 1948 to 1953, respectively.

Discussion

There is no doubt concerning incompleteness and uncertainty of the number of registered homosexual males. However, the finding of a highly significant increase of homosexual males born in Germany during the stressful war and early post-war period of the Second World War and registered by venerologists during recent years is most striking. The more so as there was not found such an increase in heterosexual males born during this critical period who were registered by the venerologists during recent years.

On the other hand, the slight tendency of higher homosexual activity with decreasing age (Table 1) — if the period before with that after war is compared — is in agreement with the results of the Kinsey Report (Kinsey et al., 1948). However, the superimposed, highly significant peak of relative frequency of homosexual males born during the war and early post-war period suggests a possible relationship between prenatal stress due to bomb attacks and other stressful war or early post-war events and sexual differentiation of the foetal brain.

Two additional possible reasons for the increased frequency of homosexual males born in this critical period may be discussed: Paternal deficiency in postnatal life and malnutrition in perinatal life. In case of paternal deficiency, the years of birth with a maximum relative frequency of male homosexuality should be expected to be somewhat earlier, since most of the children born in Germany at the beginning of the Second World War (1939–1941) had a paternal deficiency for many postnatal years. In case of perinatal malnutrition, on the other hand, the peak of relative frequency might be expected to be somewhat later, since there was the strongest shortage of food supply during the first years after war. However such possible reasons cannot be completely excluded. Thus, a lot of additional interdisciplinary research work remains to be done to give a conclusive answer about the role of prenatal (or perinatal) stress as a possible aetiogenetic factor of homosexuality in human males.

References

1. Dörner, G.: Hormones and Brain Differentiation. Amsterdam—Oxford—New York: Elsevier 1976.
2. Dörner, G.: Psychoneuroendocrine aspects of brain development and reproduction. Second International Symposium on Clinical Psychoneuroendocrinology in Reproduction, Venice June 3rd–5th, 1979.
3. Dörner, G.; Hinz, G.: Homosexuality of neonatally castrated male rats following androgen substitution in adulthood. *German Medical Monthly* **12** (1967) 281–283.
4. Kinsey, A. C.; Pomeroy, W. B.; Martin, C. E.: Sexual Behaviour in the Human Male. Philadelphia: W. B. Saunders Company 1948.
5. Sachs, L.: *Angewandte Statistik*. Berlin-Heidelberg-New York: Springer-Verlag 1978. S. 269–272.
6. Stahl, F.; Götz, F.; Poppe, I.; Amendt, P.; Dörner, G.: Pre- and early postnatal testosterone levels in rat and human. In: *Hormones and Brain Development*. Eds.: Dörner, G.; Kawakami, M. Amsterdam—New York—Oxford: Elsevier/North-Holland Biomedical Press 1978. pp. 99–110.
7. Ward, I. L.: Exogenous androgen activates female behaviour in noncopulating, prenatally stressed male rats. *J. comp. Physiol. Psychol.* **91** (1977) 465–471.

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